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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/807,690	03/24/2004	Seon Tae Kim	20010.000600/WA-411/US	4404

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Thomas R. FitzGerald, Esq.
Suite 210
16 E. Main Street
Rochester, NY 14614-1803

EXAMINER

EWALD, MARIA VERONICA

ART UNIT	PAPER NUMBER
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1722

DATE MAILED: 06/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/807,690

Applicant(s)

KIM ET AL.

Examiner

Maria Veronica D. Ewald

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 6/28/04.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: ____.

DETAILED ACTION

Claim Objections

13. Claim 12 is objected to because of the following informalities: Claim 12 states "...for spraying cooling water supplied form the cooling water pump..." The word form should be corrected to state *from*.

Claim Rejections - 35 USC § 102

14. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1 – 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Reifenhauer (U.S. 3,990,828). Reifenhauer teaches an expansion tube having a plurality of expansion slits formed along a longitudinal direction on the outer periphery surface thereof (item 6 – figure 1), each of the expansion slits having a predetermined width and a relatively larger length than the predetermined width (item 6 – figure 1;

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column 3, lines 10 – 18); wherein each of the plurality of expansion slits is in a generally rectangular shape (item 6 – figure 1).

Claims 1 – 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Mahoney, et al. (U.S. 6,863,856). Mahoney, et al. teach an expansion tube having a plurality of expansion slits formed along a longitudinal direction on the outer peripheral surface thereof (item 11 – figure 1), each of the expansion slits having a predetermined width and a relatively larger length than the predetermined width (item 11 – figure 1; column 5, lines 55 – 60); wherein each of the plurality of expansion slits is in a generally rectangular shape (item 11 – figure 1; item 51 – figure 11); wherein each of the plurality of expansion slits has a width in a range of 1mm to 3mm (column 8, lines 1 – 5).

With respect to claims 4 – 7, Mahoney, et al. further teach that each of the plurality of expansion slits has a larger length in a range of 2.5 times to 5 times than the width thereof (figures 1 and 11; column 8, lines 1 – 15); wherein an interval of the adjacent left and right expansion slits is the width or less than each expansion slit with respect to the inner peripheral surface of the expansion tube (figures 1 and 11; column 8, lines 1 – 15, 28 – 35); wherein an interval between the adjacent upper and lower expansion slits is in a range of 1/5 to 1/1 of the length of each expansion slit (figure 11); wherein the plurality of the expansion slits have the same interval (figure 11).

With respect to claims 8 – 11, the reference also teaches that the plurality of expansion slits have lengths gradually increasing along a direction to which the heat shrinkable tube is manufactured (column 8, lines 28 – 50); wherein each of the plurality

of expansion slits is in a generally rectangular shape (figure 11); and wherein each of the plurality of expansion slits has a width in a range of 1mm to 3mm (column 8, lines 1 – 5).

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 12 – 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoshima, et al. (U.S. 5,071,886) in view of Lehtinen (U.S. 5,516,270). Aoshima, et al. teach an apparatus for manufacturing a heat shrinkable tube having an expansion tube, comprising: a denser that is adapted to receive a heat shrinkable tube, while preventing the heat shrinkable tube from being loose (item 2 – figure 1; column 4, lines 30 – 33); dry heating rolls that are adapted to heat the heat shrinkable tube ejected from the denser (item 3 – figure 1; column 4, lines 33 – 35); an expansion chamber that is adapted to expand the heat shrinkable tube ejected from the dry heating rolls (item 4 – figure 1; column 4, lines 35 – 40); a caterpillar that is adapted to have the heat shrinkable tube constant in diameter (column 4, lines 35 – 40); and a bobbin that is adapted to wind the heat shrinkable tube ejected from the caterpillar (item 8 – figure 1; column 4, lines 40 – 45). Aoshima, et al. however, do not teach that the expansion tube is within the expansion chamber or teaches that there is a vacuum pump or cooling

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water; however, Aoshima, et al. do teach that there is pressurized air applied to the tube to maintain its shape and apply pressure to the interior of the tube (column 4, lines 40 – 45). In addition, Aoshima, et al. teach the presence of a cooling bath (item 6 – figure 1) to set the shape and size of the tube (column 4, lines 45 – 50).

In a method to size plastic tubing, Lehtinen teaches the use of a tool with a peripheral wall that defines that outer dimension of the plastic tubing (column 4, lines 35 – 40). The tubing is passed over the tool to which a vacuum is applied to maintain the tubing size against the inner surface of the tool (column 2, lines 40 – 44). This reads on the Applicant's claims that there is a vacuum pump for discharging the air in the expansion tube and a vacuum suction hole disposed between the wall surface of the body of the expansion chamber and the vacuum pump, for discharging the air in the expansion tube to the outside of the expansion chamber. Furthermore, Lehtinen also teaches that there is a separate channel system, comprised of longitudinal slots or grooves (item 15 – figure 2) that extend over the surface of the tool through which cooling water is circulated to cool the plastic tube and set its shape (column 3, lines 1 – 5, 18 – 24). The configuration of the slots longitudinally allows high volume flows to be produced which results in a high efficiency relative to cooling (column 3, lines 40 – 45). Furthermore, using the channel system for cooling offers advantages over the prior art in which only a cooling vat was used, in that cooling can be adjusted, intensified and made more efficient (column 4, lines 10 – 15). This reads on the Applicant's claim that that is a cooling water pump for supplying cooling water to the expansion tube, a plurality of cooling water nozzles for spraying cooling water supplied from the cooling

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water pump, and wherein the expansion tube has a plurality of expansion slits formed on the outer peripheral surface thereof along a longitudinal direction, each of the expansion slits having a predetermined width and a relatively larger length than the predetermined width; wherein each of the plurality of expansion slits is in a generally rectangular shape.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to modify the apparatus of Aoshima, et al. to include the expansion tube of Lehtinen with its longitudinal slots for the purpose of cooling the plastic tube more efficiently and evenly by producing high volume flows of cooling liquid (column 3, lines 40 – 45, 55 – 61).

Claims 14 – 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoshima, et al. in view of Lehtinen and further in view of Mahoney, et al. (U.S. 6,863,856). Aoshima, et al. and Lehtinen teach the characteristics previously described but do not teach the specific sizes of the expansion slits.

In a method to size and expand a catheter balloon, Mahoney, et al. teach that the mold or tube surface has a plurality of expansion slits extending over at least part of the tube surface (column 5, lines 55 – 60; figures 1 and 11). The expansion slits have a length greater than their respective width and can be configured along the periphery as a series of long slits (figure 1) or a plurality of slits stacked adjacent to each other (figure 11). Furthermore, the expansion slits have a width varying between 0.008 inches to a maximum of 0.05 inches (0.2 mm – 1.3 mm). This reads on the Applicant's claims that

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each of the plurality of expansion slits has a width in a range of 1mm to 3mm; wherein each of the plurality of expansion slits has a larger length in a range of 2.5 times to 5 times than the width thereof (figures 1 and 11; column 8, lines 1 – 15); wherein an interval of the adjacent left and right expansion slits is the width or less than each expansion slit with respect to the inner peripheral surface of the expansion tube (figures 1 and 11; column 8, lines 1 – 15, 28 – 35); wherein an interval between the adjacent upper and lower expansion slits is in a range of 1/5 to 1/1 of the length of each expansion slit (figure 11); wherein the plurality of the expansion slits have the same interval (figure 11).

With respect to claims 19 – 22, the reference further teaches that the plurality of expansion slits have lengths gradually increasing along a direction to which the heat shrinkable tube is manufactured (column 8, lines 28 – 50); wherein each of the plurality of expansion slits is in a generally rectangular shape (figure 11); and wherein each of the plurality of expansion slits has a width in a range of 1mm to 3mm (column 8, lines 1 – 5); wherein each of the plurality of expansion slits has a larger length in a range of 2.5 times to 5 times than the width thereof in an expansion section and a larger length in a range of 3.5 times to 10 times than the width thereof in a cooling section.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to modify the apparatus of Aoshima, et al. with the longitudinal slots of Lehtinen, configured to be sized according to the dimensions of Mahoney, et al. for the purpose of obtaining adequate airflow and cooling of the tube, depending on the operator's needs and operating costs.

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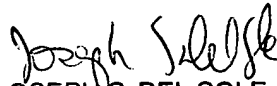
Conclusion

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maria Veronica D. Ewald whose telephone number is 571-272-8519. The examiner can normally be reached on M-F, 8 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Yogendra Gupta can be reached on 571-272-1316. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MVE


JOSEPH S. DEL SOLE
PRIMARY EXAMINER
6/7/06